

WHAT IS CLAIMED IS:

1. A marine vessel, comprising a bow section, a mid-section and a stern section in which the mid-section has a curved outer shape and includes an inner section with one of framing means and longitudinal bulkhead means.
- 5 2. A marine vessel according to claim 1, wherein the inner mid-section includes a steel frame which, together with deck means and keel means, carries the sea loads.
- 10 3. A marine vessel according to claim 1, in which the mid-section includes inner longitudinal bulkhead means which are of one of conventional or modified double-hull construction.
- 15 4. A marine vessel according to claim 1, wherein the starboard and port sides of the mid-section are made of one of continuous composite shells or panels with a hybrid light frame means at the inside thereof to carry water pressure loads and transmit resulting loads through the deck means to the inner
20 section.
5. A marine vessel according to claim 1, wherein the mid-section includes outer shells made of composite materials.
- 25 6. A marine vessel according to claim 5, wherein said composite materials are one of E- or S-2 glass fiber composites.
7. A marine vessel according to claim 5, wherein the
30 outer shells are supported on the inside thereof by a stainless steel light framing stiffener means for transmitting pressure loads.

8. A marine vessel according to claim 7, wherein the stiffener means is connected with a respective outer shell of the mid-section by way of an elastomer and a fastening assembly
5 that includes a stainless steel bolt embedded in the composite material of the respective outer shell that cooperates with a high strength spring prestressed by a nut.

9. A marine vessel according to claim 7, wherein said
10 stiffener means is one of open box member or channel member.

10. A marine vessel according to claim 1, further comprising stainless steel beams embedded in the composite materials that are connected to an inner section of the mid-
15 section that includes one of stainless steel box beams, framing means or bulkhead means.

11. A marine vessel, comprising a bow section, a mid-section and a stern section, in which the starboard and port
20 sides of the mid-section are also of hybrid composites with light framing on the inside thereof, and in which the mid-section has a curved outer shape and includes an inner section with one of framing means and longitudinal bulkhead means.

25 12. A marine vessel according to claim 11, wherein the inner mid-section includes a steel frame which, together with deck means and keel means, carries the sea loads.

13. A marine vessel according to claim 11, in which the
30 mid-section includes inner longitudinal bulkhead means which are of one of conventional or modified double-hull construction.

14. A marine vessel according to claim 1, wherein said composite materials are one of E- or S-2 glass fiber composites.

5 15. A marine vessel according to claim 14, wherein the outer shells are supported on the inside thereof by a stainless steel light framing stiffener means for transmitting pressure loads.

10 16. A marine vessel according to claim 15, wherein the stiffener means is connected with a respective outer shell of the mid-section by way of an elastomer and a fastening assembly that includes a stainless steel bolt embedded in the composite material of the respective outer shell that cooperates with a
15 high strength spring prestressed by a nut.

17. A marine vessel according to claim 16, further comprising stainless steel beams embedded in the composite materials that are connected to an inner section of the mid-
20 section that includes one of stainless steel box beams, framing means or bulkhead means.

18. A marine vessel according to claim 1, wherein the mid-section includes an inner section having upper and
25 intermediate decks of metallic sandwich construction with a core of metal foams, stainless steel microtrusses, folded plates or honeycomb.

19. A marine vessel according to claim 1, wherein the
30 mid-section includes an inner section having upper and intermediate decks made of composite materials similar to the composite materials used for the hull outer skin.

20. A hybrid catamaran comprising at least two pontoons connected by a cross structure of steel plating, whereby said pontoons each include a bow section, a mid-section and a stern section, and the hull of he mid-section includes one of a steel
5 frame means with composite skin and of steel double-hull construction.